

The Vallum of Hadrian's Wall

David J. Breeze

SUMMARY

The primary elements of the Vallum are described and the original form of the Vallum confirmed. Its later features (the crossings, milecastle causeways and the marginal mound) are described and analysed, and the evidence accrued through excavations over the last 120 years is listed and assessed, and a sequence proposed. The essential feature of the Vallum was the ditch, which could only be crossed at forts. Gaps are known in the north mound at some milecastles and it is presumed that they existed at others. The existence of boulders on the berm at Limestone Bank raises problems for the use of either berm as a line of communication. It is argued that the traditional view that the slighting of the Vallum occurred when the Antonine Wall was constructed, and that the marginal mound belongs to the reinstatement of Hadrian's Wall a generation later, is likely to be correct. Various interpretations of the purpose of the Vallum are considered with the conclusion offered that its function was to strengthen frontier control. The need for further survey and excavation of the Vallum is emphasised.

INTRODUCTION

THE VALLUM IS ASSUREDLY THE MOST DIFFICULT ELEMENT of Hadrian's Wall to understand. We can provide parallels for linear barriers (with or without ditches), for towers, for fortlets (though examples sitting on barriers are more difficult), and for forts. But we cannot do this for the Vallum. In spite of the rhetoric, little divides those who discuss the function of Hadrian's Wall; some put more emphasis on defence, but in the main the focus is on the prevention of raiding and the control of movement. The Vallum sits outside all these considerations. It suffers from a singular problem: it is unique. As George Jobey stated, unique features in archaeological research are unhelpful.

The Vallum lies behind the linear barrier which we call Hadrian's Wall. Its western end lay on the Solway at Bowness; to the east, it has not been traced further down river than Elswick (Spain and Simpson 1930, 518), a little upstream from central Newcastle. It consisted of a central ditch with a mound set back to each side, the whole being about 120 Roman feet (one *actus*: about 35.5 m) across. (For a comment on the scale of the work involved in its construction, see Hill 2004, 135–6). The 'traditional' or 'classic' section is of a ditch 6.1 m wide at the top, with a mound 6.1 m wide set back 9.14 m on each side (Richmond 1947, 28–9). It is often stated that the earthworks of the Vallum are equally balanced, but that is not entirely true as, while there are no known original gaps in the south mound, some are known in the north mound. These always occur at milecastles, though we can see through the excavations of Brenda Heywood (née Swinbank) that the causeways at milecastles are not original but secondary (Heywood and Breeze 2008). The only known original causeways lay at forts, where four (or five) have been identified out of a possible 12, and to these we may add the presumed causeways where the main roads passed through the Wall at gates, though only one such gate is known, the Portgate on Dere Street; another presumably existed to the north of Carlisle. Inscriptions indicate that the Vallum was constructed by soldiers of auxiliary

regiments (Richmond and Birley 1937; Hill 2004, 123; *RIB* 3376, with Heywood and Breeze 2008, 122).

To this description we can add other physical elements. These include a mound sitting on the south lip of the ditch and termed the marginal mound; crossings over the ditch in various locations, usually accompanied by gaps in one or both of the two main mounds; a road sometimes running on the north mound and known as the Military Way; and some evidence for a metalled surface on both north and south berms. (The existence of a northern marginal mound surviving in short stretches has been claimed but these are difficult to identify today).

It is important to acknowledge how few excavations there have been on the line of the Vallum and the small number of modern investigations. In addition, all of the excavations before Wilmott's two sections at the well-preserved stretches of the Vallum at Appletree and Black Carts were small in scale and the results are often difficult to interpret, especially when all that exists is a report no more than one sentence long. Further, the Vallum to the west of Carlisle has been largely ignored. A recent spate of rescue excavations in the vicinity of the Carlisle western by-pass has helped to redress the balance (Glendinning 2005; O'Connor 2006; White *et al.* 2013; Zant forthcoming).

A basic problem with any interpretation is that it frequently reflects the beliefs of its promoter. This is even more the case with a unique monument. There are two elements of significance in trying to determine the function of the Vallum: an appreciation of its nature and an understanding of the operation of the Roman army. In this discussion, no attempt is made to undertake a historiographical approach; rather the aim is to state and discuss the surviving evidence. (The basic references are: Simpson and Shaw 1922; Swinbank 1954; Heywood 1965; Heywood and Breeze 2008; Wilmott 2008 and 2009. It is unfortunate that Brenda Swinbank's PhD thesis was not published, but it is available online: <http://etheses.dur.ac.uk/6395/> [accessed 9th August, 2015]).

In this paper both the names and the numbers of structures are provided to aid identification, while a single number refers to the Wall mile.

THE LINE OF THE VALLUM

The Vallum relates very closely to the Wall in certain sectors but elsewhere can deviate considerably. Its relationship to the Wall can be divided into four broad sectors:

- from Benwell (T 6b) to Sewingshields (T 33b) the Vallum is very close to the Wall, the intervening space only increasing where the Wall moves a little to the north to take advantage of a high point, for example at MC 16 (Harlow Hill);
- from Sewingshields to Carvoran (MC 46) the Wall follows the crags while the Vallum takes the lower ground to the south, resulting in the gap widening to as much as 800 m;
- at Carvoran the space narrows again and continues in this manner up to Stanwix (MC 66), with the exception of Castlesteads where it encompasses the fort — itself detached from the Wall and which may already have been in existence — though the gap is generally not as narrow as in the eastern sector of the Wall except through the 3.5 km to the west of Harrow's Scar (MC 49);
- west of Stanwix there are two places where the Wall swings to the north to take advantage of the higher ground overlooking the Solway Firth, while the Vallum takes a direct route in both instances.

Two results emerge from this brief survey. First, it would appear that the surveyors did not slavishly follow the line of the Wall but cut across country where the Wall diverged to the north. Second, there are two sectors where the Wall and the Vallum are very close together, from Benwell (T 6b) to Sewingshields (T 33b) and from Harrow's Scar (MC 49) to Stanwix (MC 66), that is about half the length of the frontier, and indeed in some places the two linear elements are so close that the gap is just a few metres at milecastles. It has been argued that the closeness indicates that the Vallum was earlier than the Wall, a proposition dismissed by Swinbank (1954, 225).

Is it possible to explain these differences? One possible reason relates to timing; perhaps the sections with the narrower space were laid out first, but subsequently the view on the location of the Vallum changed. Landscape may have played a part. The steep slope down to the River Irthing lies close behind the Wall in the sector from MC 49 (Harrow's Scar) to T 54a (Garthside) and this may have pushed the Wall and Vallum close together (as noted by Swinbank 1954, 225–6). A similar situation pertains in the stretch west of Newcastle, but elsewhere in this sector there seems to be no reason why the Vallum could not have been placed a little further south. The basalt in the central sector is likely to have led the surveyors to run the Vallum through the lower ground further south, though this may not explain its separation from the Wall elsewhere. While we may note that though the army was prepared to dig through solid rock when necessary, it generally tried to avoid excavating basalt. Possibly cost played a part. Domitian is recorded as paying compensation to farmers in Germany for the loss of their crops when forts were built on their land (Frontinus, *Stratagemis* 2, 11, 7). Many excavations in the eastern part of the Wall have provided evidence for earlier agriculture below the Roman levels so this is not such an improbable suggestion.

THE DIFFERENT ELEMENTS OF THE VALLUM

There is, to my knowledge, no disagreement about the central nature of the Vallum, a ditch with a mound set back on each side (Heywood 1965, 85; Wilmott 2009, 134). There are differences in detail, but a hundred years ago Mrs Hodgson stated that in her mind 'the builders of the so-called Vallum cared very much for the construction of the ditch and not much for anything else' (Hodgson 1897, 397–8). While there are certainly inconsistencies in all the various elements of the Vallum (Wilmott 2008, 121), there is also evidence that care was taken with the mounds as well as the ditch. Yet it is worth emphasising two elements. First, the excavation of the ditch was important. This, as is well known, may be observed at Limestone Corner where the Vallum ditch was completed while the Wall ditch was not, but it is also indicated by its revetment in places (Simpson and Shaw 1922, 361; *JRS* 30 (1940) 164). Second, but not so often noted as a significant feature, the mounds to each side of the ditch were carefully constructed with turf, clay or stone revetments. The conclusion can only be that the army considered the Vallum to be important, therefore requiring a certain element of care in its construction. That said, the problems start when we try to make sense of the ancillary features. The essential information must be set down so that it can be analysed.

The ditch

The 'classic' profile of the ditch was provided by Richmond (1947, 29): 6.1 m wide at the top; 3.05 m deep and 2.5 m wide across a flat bottom, with sides standing at 60 degrees. Heywood,

however, affirmed that the profile of the ditch related to the local subsoil conditions (Heywood 1965, 85; Wilmott 2008, 121). It varied in width from 3.35 m at Housesteads and 4.6 m at Limestone Corner — both cut through rock — to 11.9 m at Cawfields, with variations between these two measurements elsewhere (Swinbank 1954, 284–7; Wilmott 2009, 134). Nor was the ditch always flat-bottomed, at Limestone Corner it was V-shaped (Heywood 2009). The importance of the ditch is emphasised by the way it was cut through rock as, for example, at Limestone Corner. (Richmond stated in the *Handbook* that at Great Hill ‘the sides are built in masonry where the rock exhibits gaps’ (Richmond 1947, 57), but I have not found the source for his statement.)

Mrs Hodgson pointed out that the ditch narrowed as it approached a fort (Hodgson 1920, 283). This was amplified by Simpson and Shaw into a slightly more detailed statement that ‘at each case of avoiding a fort, the width of the Vallum and the size of the Ditch and mounds (where the latter have been traced) are considerably reduced, throughout the length of the deviation from the regular line’ (Simpson and Shaw 1922, 366). It is not easy to confirm this in view of the wide variations in the width of the ditch but the phenomenon was observed at Halton Chesters where the ditch narrowed as it was diverted round the fort. Immediately east of the diversion it is 7 m or 7.60 m wide (the description and the plan offer different dimensions), narrowing to 4.5 m in the diversion (Simpson 1974, 159–61). At Benwell the ditch was 5.33 m wide at the causeway and 4.87 m on the western arm of the diversion, and one Roman mile (1.6 km) to the west it was 5.70 m across (Bidwell and Watson 1996, 35).

Wilmott has recently discussed the silting of the ditch, which appears to have occurred naturally, and also slumping of the ditch sides (Wilmott 2008, 121–2). Re-cutting following silting was argued for the section below the crossing at Cawfields examined in 1939, but only silting is recorded on the published section (*JRS* 30 (1940) 163, fig. 13), and Wilmott has pointed out that the original profile of the ditch is restored on the drawing (Wilmott 2009, 135). The cutting back of the sides of the ditch and the retaining of the sides by ‘turfwork capped with clayey sand and resting upon a solid base of stone, four courses high’ is now believed to be an original feature (Heywood 1965, 85). At Knockupworth, west of Carlisle, evidence was recorded for the re-cutting of the ditch but it appears to have related to the removal of a crossing (Zant forthcoming; for further discussion see below). No evidence has been found at any other point to prove that the ditch was recut (Swinbank 1954, 300; Wilmott 2008, 121).

One of the most recently excavated sections of the ditch, at Denton, revealed that it was rock-cut with the lowest fill formed by fragments of the laminated sandstone through which it was cut; above this were compacted layers of clays and silts, some stained black by standing water (Bidwell and Watson 1996, 35–6). Here, as elsewhere, the Vallum ditch turned into a marshy depression (cf. Raistrick, report in Swinbank 1953, 94 in relation to the ditch at Carvoran).

The north and south mounds

The mounds were generally well constructed with turf cheeks, sometimes with clay cheeks and occasionally with stone revetments, the enclosed material being derived from the ditch (Anon 1894; Haverfield 1895, 458). They are not, however, uniformly wide, varying from 4.4 m to 9.2 m, though usually within the range 5.5 m to 6.8 m, though we should also note the wise words of Mrs Hodgson, it is difficult ‘in the sections, to decide from the present

appearance of the upcast what was the original width of the mounds. It is frequently evident that the upcast has slid down from its original position ... It is probable that another person taking the measures might take them differently' (Hodgson 1894, 244; cf. Glendinning 2005, 25). At Millbeck Farm, the turf layers in the mounds had a combined width of about 10 m and 11 m, which was taken to indicate that the mounds had been spread by ploughing, another problem for the modern surveyor (White *et al.* 2013, 241).

Widths of 1.22 m at MC 23 (Stanley Plantation), 1.37 m at MC 51 (Wall Bowers) and 1.5 m at Crosby-on-Eden have been recorded for the turf revetments on each side of the mounds, while one clay revetment at Denton was 2.07 m wide (Heywood and Breeze 2008, 101; Simpson and Richmond 1937, 159; Bennett 2009, 125; Bidwell and Watson 1996, 38). Stone revetments have been recorded at West Denton, Wallhouses, Heddon-on-the-Wall and Stanley Plantation (Tait 1962, 140; Bennett and Turner 1983, 66; Tait 1962, 143; Heywood and Breeze 2008, 97, 100–1). We should also note a stone 'capping' of small slabs in the south mound at West Denton which was confined within the turf revetments (Tait 1962, 137–8).

It has been recorded that the mound often sat 'directly on the pre-Roman soil surface' (Bidwell and Watson 1996, 38; cf. Hodgson 1897, 391), but there is no consistency in the evidence for the order of construction of the mounds, though there are more instances where it has been argued that the south mound was the earlier (Wilmott 2008, 121; 2009, 134–5). At West Denton, the turf had not been stripped from below the south revetment of the south mound, whereas it had from below the rest of the mound (and from under the north mound), leading the excavator to suggest that the revetment was constructed first (Tait 1962, 137, 140). Since the ditch was centrally placed, it is possible that the outer edges of the earthwork were marked out first with the soldiers subsequently working within that frame.

No original gaps are known in the south mound, but they have been recorded in the north mound at MC 23 (Stanley Plantation) and MC 51 (Wall Bowers), and it is assumed that they existed at every milecastle; at the only other two milecastles where this particular feature has been investigated and sufficient remained for conclusions to be drawn, MC 49 (Harrow's Scar) and MC 50 TW (High House), the Vallum approached the milecastle so closely that there was no north mound at this point (Heywood and Breeze 2008, 97–9; Simpson and Richmond 1937, 160).

The berm

The mounds are normally set back roughly equidistant from the ditch. Even where the distances are not the same today, it is possible that they were in the past. At West Denton, the ditch fell on the centre line between the mounds though weathering had reduced its original sharp profile allowing the excavator to argue that the original width of both berms was 10.67 m, amongst the widest recorded, not the narrower distances recorded during excavation (Tait 1962, 139). This is not a new problem. Mrs Hodgson commented on the difficulty in 'determining what point in each slope to regard as intersecting the line of the original surface' (Hodgson 1894, 244).

The widths of the berms could vary considerably. At Appletree, the south berm was 8.10 m wide and the north one of the narrowest recorded at 4.61 m. Bidwell and Watson observed that the south berm between Newcastle and Halton Chesters was wider than normal, and Wilmott suggested that 'provision was made for a marginal mound which was never actually built' (Bidwell and Watson 1996, 38–9; Wilmott 2009, 135). In this sector the greatest variation

was at Denton where the difference in width between the two berms was 1.35 m (Bidwell and Watson 1996, 35–40). This is less than a Roman pace of 1.5 m and it might be questioned whether the difference in widths is significant. A Wall mile to the west, at West Denton, the berms were also of different widths, but the excavator argued that they had originally been the same, as we have seen. It is certainly worth bearing in mind both that the mounds and the ditch could vary considerably in width and Mrs Hodgson's comment about the primary importance of the ditch, quoted above. It has yet to be proved that the different widths of the berms were significant.

Earlier historians appreciated that there was a road along the Vallum, sometimes utilising the north mound, and that this was a good line for a road: this is the Military Way, discussed below. (Swinbank 1954, 246–65 narrates the history of that discussion.) In 1892 the first suggestion of a road along the south berm appears, though this proposal 'was rather rudely shaken [at Teppermoor] as the solid blocks of basalt which were taken out of the ditch are lying higgledy-piggledy (most probably where the Romans left them) on the space over which any such road was likely to go' (Anon 1892, 182). Yet the suggestion of a road along the south berm was resurrected by Eric Birley who proposed that the 'line selected for the Vallum was that which had already been chosen for the Wall's immediate line of communication which will be designated *the service road*', and he postulated that the 'service road' lay on the south berm (Birley 1949, 24). He set out to prove his view through excavation. He recorded metalling in some places, but not all, and metalling has also been found on the north berm. The evidence is as follows:

- Denton (7b–8): 'no traces of metalling were seen on the surface of the [north] berm'; the south berm had been disturbed by modern intrusions (Bidwell and Watson 1996, 38);
- Wallhouses (18a): the south berm 'was "cut" by the hollow way leading onto the Vallum crossing' but no metalling was recorded (Bennett and Turner 1983, 71);
- Down Hill (20): 'limestone metalling ... on the south berm ... the surface seems to have been well trodden.' Swinbank also commented on the nearness to the rock and the consequent stony character of the thin layer of topsoil above it (Swinbank 1954, 255);
- Stanley Plantation (23): 'no road metalling was discovered at all on the south berm for the whole width of the causeway' (Heywood and Breeze 2008, 101);
- Black Carts (29): on the north berm, 'the natural buried soil was directly covered with an uneven spread of compacted and loose cobbles, which appeared to be scored by east-west wheel ruts' (Wilmott 2009, 96);
- Limestone Corner (30): '1.37 m north of the limit of the [south] mound and stretching for roughly 1.82 m northwards on the berm, were a number of flat whin boulders embedded in the subsoil. Whether these were placed there by nature or by human agency was difficult to determine, but in either case they might have served as a patrol track' (Heywood 2009);
- near MC 34 (Grindon): in 1947 E. Birley and C. E. Stevens cut a trench on the south berm, discovering that 'a lightly metalled path ... had been grassed over before the marginal mound formed' (Swinbank 1954, 257);
- Mosskennels (35): in 1950 Simpson examined the south berm where, 'small whin cobbles were found in a thick layer across the south berm, which were stated after geological examination to be "rock fragments", not "glacial boulders", and "more likely to be pieces of Whin Sill cut by the Vallum diggers and thrown to the south in a haphazard manner"' (Swinbank 1954, 257–8 quoting Professor Tomkeieff of Newcastle University); in the adjacent trench to the east no such cobbles existed on the south berm;
- between MC 36 (King's Hill) and the Knag Burn: in 1947 Birley and Stevens examined the south berm and found that it lay on solid rock (Swinbank 1954, 257);
- High Shield (38a–b): in 1949 Birley discovered 'light metalling' on the south berm (Swinbank 1954, 257);

- Cawfields (42): 'no metalling or track was found' on the south berm (Heywood and Breeze 2008, 110, 112, 114);
- Cockmount Hill (43): 'no metalling of any kind' was found on the south berm but 'a solid compact boulder clay subsoil' (Swinbank 1954, 258–9);
- Carvoran (45): 'sparse light metalling for at least half the width of the south berm' (Swinbank 1954, 259; cf. Swinbank 1953, 87);
- High House (49b–50 TW): 'for some 40 yards east of the [milecastle] causeway the south berm had been surfaced with gravel, from the [south] mound northwards for about 15 feet. Beyond that point, towards the drier summit of the hill, only isolated patches of surfacing appeared.' (Simpson and Richmond 1937, 170);
- High House (50–50a TW): 'towards the west ... heavy road-bottoming, at least 18 ft (5.4 m) wide, was discovered. The north berm revealed no surfacing' (Simpson and Richmond 1937, 170); this was further explored in 1951 when it was revealed that this heavy road-bottoming was part of a later kiln; lighter cobbling was recorded immediately north of the south mound (Swinbank 1952, 49–50);
- Appletree (50a–50b): 'a metallated track c. 8 ft (2.4 m) wide survived on the north berm' (*Britannia* 7 (1976) 310);
- Appletree (50b–51): 'Above a deposit of material that had slumped from the [north] mound was a spread of stones 2.5 m in width. This comprised a lower deposit of large, irregular shaped, flat stones over which was a patchy layer of small, rounded pebbles. ... A group of flat stones on the northern lip of the Vallum ditch, 2.15 m to the south of the intact surface, appeared to comprise a part of this spread which had slumped into the ditch.' 'There is a possibility even that this material has spread from a post-medieval boundary wall now destroyed' (Wilmott 2009, 112, 119);
- Knockupworth (67): on the north half of the north berm, compacted gravel and pebbles over larger cobbles formed a track 3.35 m wide; the form of construction of this track suggests that it may have been the Military Way (Zant forthcoming; Glendinning 2006, 25);
- Millbeck Farm (69–70): 'the surface of the south berm survived as a solidly compacted brownish red silty sand matrix with over 40 per cent sub-rounded pebbles', in contrast to the north berm which had 'less than 5% small pebbles' (White *et al.* 2013, 241);
- Burgh-by-Sands (71b–72): 'immediately to the north of the Vallum ditch on the north berm was a layer of sand and cobbles' (Austen 1994, 41).

The evidence for metalling on the north berm at Black Carts, Appletree, Knockupworth and Burgh-by-Sands, the most modern excavations, appears to be sound. 'Limestone metalling' was recorded on the south berm at Down Hill, a light metalling at Grindon, High Shield and Carvoran, gravel at High House and something approaching a cobble surface at Millbeck Farm. In no case has the metalling been dated, though at MC 34 (Grindon) it was stated to have preceded the marginal mound.

The archaeological interpretation of the cobbles at Mosskennels was overturned by the soil scientist and in the same vein doubt must be cast on the limestone metalling at Down Hill — not least because of the excavator's own discussion — on the light metalling at High Shield, and on the grassed-over lightly-metalled path at Grindon as there is no description for either. 'Sparse light metalling' at Carvoran hardly creates a 'service track'. The location of the metalling on the south berm at High House suggests that it may only have been provided where the ground was soft. Yet, while doubt may be cast on some identifications, a more recent excavation has led to the suggestion of a pebble surface on the south berm at Millbeck Farm. One cautionary point may be noted. A paved trackway was recorded on the south berm and a spread of stones on the north berm at West Denton, but both proved to be modern (Tait 1962, 138–40).

Taking the reports at face value, there is good evidence for a track along the north berm in four places while in each case that for metalling on the south berm is less good. Heywood's

demonstration that the milecastle causeways are secondary makes no sense of a track on the south berm, at least in a primary context (Heywood and Breeze 2008). She had earlier tentatively suggested that the track could have linked the milecastles that had been erected before the construction of the Vallum, with the line subsequently followed by the earthwork (Swinbank 1954, 260). The argument is circular: the Vallum is straight because it followed the line of an earlier road, and an earlier road must exist because the Vallum is straight. Yet, the idea lingered into the 1980s (Dobson 1986, 24).

Heywood stressed the sporadic evidence for a track. To this we can add the point made by the anonymous commentator of the 1890s about the difficulty of moving along the berms, and a further argument made by Heywood against the use of the berms for traffic, the Vallum's precipitous descent at the crossing of a stream or gorge (Swinbank 1954, 40).

This discussion of communication along the Wall should be placed in a wider context. A track was discovered behind the Stone Wall at Denton, the remains of a cobbled surface and pebbles at Knockupworth were interpreted as a track, and a hollow way was recorded behind the Turf Wall at Tarraby near Carlisle (Bidwell and Watson 1996, 33–4; Glendinning 2005, 24–5; Smith 1978, 23–4). Birley noted the references to a 'lesser Military Way' recorded by Gordon and Horsley in Wall miles 28–9 and 32–4, but acknowledged that excavation had found no trace of such a road or track and suggested that the observations were based on a misapprehension (Birley 1961, 114–6). Perhaps much of the evidence for metalling on either berm should be seen within the framework of the wider landscape. Soldiers and travellers wished to move along the Wall line and paths, tracks and roads were created to facilitate that and some lay on one of the Vallum berms. None of these tracks need to be seen as primary.

The Vallum and quarries

At three locations the relationship between quarries and the Vallum has been observed either through excavation or survey.

- Bleatarn (60–60a): excavation in 1894 by Haverfield led to the discovery of a quarry, but further investigation the following season led to the conclusion that the 'Vallum seems to have run along the edge of the quarried area, but its details are no longer discoverable ... The relation of this quarry to the Vallum cannot be fixed. The lie of the strata exhibited in the section proves that the Vallum has not been carried across it but rests on the undisturbed subsoil. On the other hand it is possible that it has been carried into the Vallum' (Haverfield 1895, 464; 1896, 192); Mrs Hodgson recorded that the 'quarry ... must have been later than the building of the Vallum, for the workers have encroached slightly on the north mound' (Hodgson 1897, 407);
- Carrawburgh (31): Haverfield found the Vallum ditch to the east and west of the fort, 'perhaps, 28–30 feet (8.5–9.1 m) wide at the top ... the filling was found to be disturbed each containing some large stones, with a bottom of black peaty matter in which were bits of pottery, bone and sewed leather, to a depth of at least six feet (1.8 m)'. Forty feet (12.2 m) from the east fort wall the Vallum ditch 'stopped' and instead 'a ditch, about 15 feet (4.6 m) wide at the top, was found to run southward parallel to the rampart and to the ditch of the fort, from which it was separated by a bank of undisturbed soil some five feet (1.5 m) wide at the top'; this was interpreted as the Vallum ditch turning round the southern part of the fort (Haverfield 1897, 417). The following season, Haverfield returned for further investigations. He excavated along the face of the east fort wall and discovered that it was erected on 'a large and deep layer of large rough stones, the intersects wholly empty of earth. The width of this layer is about 35 feet (10.7 m) from north to south and possibly as much from east to west; its thickness is more than six feet (1.8 m)'. Haverfield concluded that this was probably 'the filling of some hollow which existed here before the Roman built his fort wall, and which had to be filled up with solid material

when that wall was constructed' (Haverfield 1898, 175–7). Relevant to any interpretation of these observations is Haverfield's statement that 'trenches dug inside the fort make it additionally certain that no Vallum ditch ran straight across the area of the fort' (Haverfield 1898, 175). In this statement he was wrong. In 1934, Eric Birley located the Vallum ditch under the fort and this was confirmed in 1968/69; the ditch was 8.5 m at the top, similar to Haverfield's measurement (Breeze 1972, 89). Equally relevant is the width of Haverfield's trenches, 3 feet (900 mm). In short, care has to be taken with his observations and therefore conclusions, as comparison between his reports and those of Mrs Hodgson at the time demonstrates. Welfare (2013, 95) argued that the hollow was an earlier quarry. It seems to me rather coincidental that a quarry should lie on the line of the Vallum ditch and would therefore accept the hollow as being that ditch. Against this is Haverfield's statement that the ditch ended at a bank of undisturbed soil. But Haverfield's description was poor; what he meant was not that the Vallum ditch ended but that it turned south to run round the fort. It seems likely that his interpretation was influenced by his earlier excavations at Birdoswald where he traced the Vallum round the south side of the fort, though in the location which was later seen to be more usual than his interpretation of Carrawburgh (Haverfield 1897, 415–6). Welfare's interpretation is supported by the 'bank of undisturbed soil' between the inner fort ditch and the outer fort ditch/Vallum ditch. Yet, in every other way, the description makes sense with a new ditch cutting across the line of the Vallum.

- Shield-on-the-Wall is the site of a survey by Humphrey Welfare (2013). The northern rampart of a camp was exactly parallel to the line of the Vallum which suggests that 'the course and width of the Vallum must have been determined before the camp was established' (Welfare 2013, 87). A quarry preceded the construction of the Vallum, which stopped at its eastern edge; 'the ditch of the Vallum, in its normal form, is absent in this section [the quarry]. No ditch has been cut into the floor of the quarry. To compensate, a massive bank, on the line of the Marginal Mound, was constructed across the floor of the quarry. ... The intention was clearly to replicate the ditch by recreating the obstacle that it presented' (Welfare 2013, 85–6). The quarry is most likely to be related to the construction of the Wall and the camp created for the builders — spoil from the quarry spilled over onto the northern defences of the camp presumably at or close to the end of its life (Welfare 2013, 93). 'It is therefore impossible to resist the conclusion that the Vallum was part of the *initial* concept of the frontier (although it was not necessarily a part of the earliest phase of *construction*)' (Welfare 2013, 95);
- Millbeck Farm (69–70): four shallow and irregular pits were sealed by the spread relict turf layers of the south mound and may have been quarry pits, though these could possibly have been prehistoric (White *et al.* 2013, 242–4), while a few metres to the south-east a pit was recorded approximately on the line of the north mound, which had not survived (O'Connor 2006, 7–8).

These quarries offer the hope of creating a relative chronology for the various elements of the Wall. However, there are problems. At Bleatarn the relationship between the Vallum and the quarry could not be determined. The existence of a quarry at Carrawburgh is based upon an interpretation of Haverfield's excavations, the reports of which are not reliable. At Shield-on-the-Wall the sequence has been mapped out, but the timescale is another matter. It seems to me not impossible that the camp and the quarry relate to work on building this sector of the Wall after the implementation of the decision to construct the Vallum. We have no clear understanding of the timescale of building, especially in the central sector, and it is possible that no work had been undertaken in the area of Shield-on-the-Wall before the fort (and Vallum) decision, and that the structures and foundations of the Wall were constructed to Broad Wall specifications at the same time as the planning — and possibly the building — of the forts was starting; the surveying of the line of the Vallum may have been undertaken, and its construction possibly started, before the decision to stop work on the Wall and subsequently to narrow it (Hooley and Breeze 1968, 110–12).

Milecastle causeways and 'crossings'

Heywood distinguished between crossings at milecastles (and forts), which she termed causeways, and the crossings thrown across the ditch elsewhere. The evidence for milecastle causeways will be taken first.

- MC 23 (Stanley Plantation): the causeway south of the milecastle was 'composed of light-grey silty material mixed with large yellow sand-stones. Where this material came from is a matter of conjecture since it is clearly not mound material thrown back into the ditch' (Heywood and Breeze 2008, 103);
- MC 30 (Limestone Corner): the fill of the milecastle causeway was 'smallish stones [whin] boulders and softish brown soil'; it was not surfaced with Roman metalling (Heywood and Breeze 2008, 95);
- MC 42 (Cawfields): two sections were cut across the milecastle causeway, both demonstrating broadly similar fills of peat, silt and gravelly deposits (Heywood and Breeze 2008, 107–110);
- MC 50 TW (High House): examined in 1935 and 1936 when the Vallum ditch south of the milecastle was found to be filled with 'cut blocks of peat ... surfaced with river cobbles' (Simpson et al. 1936, 160; Simpson and Richmond 1937, 173);
- MC 51 (Wall Bowers): the ditch south of the milecastle was found to be filled with turfwork covered by a paved roadway (Simpson and Richmond 1937, 162).

These causeways at milecastles are all secondary, with no uniformity in the fill; Heywood's comment that the material in the causeway at MC 23 (Stanley Plantation) was not mound material should be noted. Heywood also made the point that the causeways stand higher in the ditch than the crossings (Heywood and Breeze 2008, 96).

'Crossing' is a term which has been applied both to an infilling of the ditch and to gaps in the mounds; here 'crossing' refers only to the infilling of the ditch. Even so, it is something of a misnomer as there was often little material in the ditch and rarely enough to allow the ditch to be crossed comfortably (Welfare 2013, 90). The crossings and the gaps are normally, though not always, on the same alignment. This generally helps to support a Roman date for the crossing, though post-Roman crossings have been noted.

Crossings in the ditch and gaps in the mounds have been recorded from West Denton (between T 7b and MC 8) to MC 55 (Low Wall) (Swinbank 1954, 37, 108). The visible crossings are mostly about 41 m (45 yards) apart, although distances as short as 36.5 m (40 yards) were recorded near MC 24 (Wall Fell), and as long as 48 m (53 yards) between High Shields and Twice Brewed and 53 m (58 yards) at West Denton.

Sometimes, the gaps in the mounds are not opposite each other. Swinbank noted that a little to the west of the Portgate, to the west of MC 32 (Carraw), and between MC 36 (King's Hill) and the Knag Burn, the gaps 'seem to alternate rather than correspond' (Swinbank 1954, 54, 77–8, 83). The gaps in the north mound can be as far as halfway between the gaps in the south mound.

Simpson and Shaw (1922, 398) noted only one area, at Coombe Crag Wood, where they believed that the Vallum was in its original form. Here, however, Swinbank (1954, 105) observed slight depressions in the mounds. Accordingly, there would appear to be no part of the Vallum which survives in its original form. The sections excavated through the crossings are:

- Wallhouses (18): over silt was a fill of a series of layers of loam and stone blocks, interpreted as deliberate fill, over which was silt, then more soil and clays forming the basis for a crossing, surfaced by cobbles (Bennett and Turner 1983, 69–71);
- Cockmount Hill (43): a section dug in 1920 demonstrated that the crossing was not original, but was composed of 'clean material, a boulder clay, similar to that through which the Ditch

has been cut, and of which, therefore, the mounds are composed. Between the causeway [i.e. crossing]-material and the bottom of the Ditch was a stratum less than two inches (50mm) in thickness, better described as slimy than peaty because it contained a much greater proportion of rain-washed material from the sides than of vegetable growth.' A second section across the open ditch revealed the 'same slimy stratum ... at the bottom, but above it there was a gradual change into pure peaty material, the thickness of which ... was excessive.' (Simpson and Shaw 1922, 410);

- Cockmount Hill: a further section cut through a crossing of the ditch in 1939 revealed that the material had been thrown into the ditch 'after the rapid collapse of the sides had taken place and conditions for growth had established themselves on top of the silted mass' (*JRS* 30 (1940) 164). The botanist Dr Kathleen Blackburn was consulted and she 'was prepared to set a time-limit of "not less than 5 years and not more than 15" for the processes recorded', that is, the estimated lapse of time between the cutting of the ditch and the deposition of the crossing (Richmond 1950, 53);
- Carvoran (45): two sections proved to be similar to each other, though at one 'light metalling' was traced across the berms and the crossing; the crossing material was 'presumably ... from the gaps in the Vallum mounds thrown back into the ditch' and it overlay a layer of 'dense black material, presumably silt', 400 mm thick, at the bottom of one crossing but, as Swinbank noted, 'it would be hazardous to express an opinion as to how long the vegetable mud had taken to form' (Swinbank 1953, 86-8);
- Crosby-on-Eden (61): a section across the ditch revealed primary silting 60-200 mm thick, succeeded by thin (100 mm) lenses of peat which may reflect vegetation growing over the silt, after which turfs were dumped in the ditch, followed by clay and then soils similar to those in the Vallum mounds; it was suggested that the excavation had sectioned a crossing and that the turves were from the revetment of the Vallum mounds (Bennett 2009, 125-8);
- Walby (62): over slight silting, a layer of turves was set on edge across the ditch, which in turn was covered by broken turfy material and clay (Richardson 1978);
- Knockupworth (67): above primary silting lay a block of turf measuring about 2 m by 1 m, which probably came from the slighted Turf Wall since it was larger than the normal width of a turf revetment to a Vallum mound; the ditch was later recut along its southern edge, the action removing the northern edge of a possible marginal mound (Zant forthcoming).

It is generally believed that the material in the crossings came from the mounds, though Swinbank stated that was not the case with the causeway at MC 23 (Stanley Planation). The only places where turf was found in the crossings are in the Turf Wall sector and it is possible that the Wall was the source of the turf, and not the smaller revetments of the Vallum mounds.

In two cases metalling was recorded on the crossing, but Swinbank (1954, 72) noted that between Limestone Corner and Carrawburgh 'the crossings in this sector at least are far too rocky to have allowed traffic of any kind to pass over them'.

Birley (1939, 233-4) suggested that the crossings were made at the location of centurial stones, but Swinbank pointed out 'that the fact that the only centurial stones found from the Vallum were not removed by the crossings system, detracts from the argument' (Swinbank 1954, 375, n. 8).

The south marginal mound

A marginal mound sitting on the south lip of the ditch (or set back a little) has been observed on Harlow Hill (MC 16) in the east and as far west as Monkhill Mill (MC 70) (Swinbank 1954, 45; Whitworth 2009, 45). The composition of the marginal mound is important to its understanding and therefore the known evidence is set down below. Sections have been cut across the southern marginal mound at the following places:

- Down Hill (20): the 'extremely small' mound is formed of 'loose soil and stones' including those of a type not found in the ditch; both aspects combine to suggest that the mound does not represent a recutting of the ditch (Swinbank 1954, 290–1; Heywood 1965, 92);
- Stanley Plantation (22): 5.8m wide, over a layer of 'clean, bright yellow sandstone' which rested on the old turf line, the mound was composed of 'loose, dirty material ... supported by a so far unique turf-kerbing'; the material was such as might represent cleaning out of the ditch (Swinbank 1954, 291–2; Heywood 1965, 92);
- Black Carts (29): 4.2m wide and consisting of 'two lower layers of clay below a shale cap ... it consisted of clean materials similar to those in the south Vallum mound itself ... It also had the identical stratigraphical relationship with the underlying buried soil deposits and ard marks as the south mound. ... Above the buried soil and ard marks there was a layer of hard iron panning' (Wilmott 2009, 93, 97);
- Limestone Corner (30): 2.8m wide and formed of loose soil and whin boulders, unlike the south mound which was formed of rusty-red gravel extracted from the ditch, but topped by gravel of a different type (Swinbank 1954, 293; Heywood 2009);
- Grindon (34): 'a lightly metallated track was found which had grassed over before the marginal mound was formed' (Swinbank 1954, 257);
- Cawfields (42): 'the ditch passes through low waterlogged ground and has been re-cut, as the presence of the well-known marginal mound attests' (*JRS* 30 (1940) 163–4). Richmond later stated that the 'marginal mound, as the Cawfields section and geological analysis showed, is derived from no such undertaking but represents a still later cleaning out of the re-cut ditch' (Richmond 1950, 54).
- Cawfields (42): the marginal mound, 7.6m wide, 'yellow upcast or brown sandy soil ... rested on a stoney layer,' which in turn sat on the same old turf line which extended over the south berm and under the south mound; the stoney layer thinned out south of the marginal mound and was not found under the south mound. Analysis of the soil forming the marginal mound 'found [it] to be upcast from the ditch and definitely not silt'. 'A second layer of greyish loam covered the northern' side of the mound, and was revetted with stones along the lip of the ditch; analysis demonstrated that this was 'clearly silt cleaned out of the ditch'; it yielded a fragment of samian ware dating to the late second or early third century (Heywood and Breeze 2008, 112, 114–6, 122–3);
- Appletree (50): 'The two principal mounds ... [rested] on a distinct though broken black line of original surface. The old surface line beneath the "marginal mound" south of the ditch is also plain but the mound itself was found to be much worn down' (Haverfield 1896, 189). 'I am disposed to think that this mound may be the result of occasional cleanings out of the ditch. The upcast was mixed, and very different from that in the two principal mounds' (Hodgson 1896, 244–5). 'At Appletree ... there is also a small inner mound in which the upcast is much more mixed than in the larger mounds, and which is considered to be the result of later clearings of the ditch' (Hodgson 1920, 283); the marginal mound was 2.44m wide (Hodgson 1896, 248–9);
- Appletree (50): 6.12m wide and formed of 'light orange-brown silty clay with lenses of clean reddish and grey sand, and occasional stones, all of which occur as constituents of the natural glacial boulder clays of the area. It was raised directly on the natural boulder clay ... There was no sign of any buried soil or old ground surface beneath the marginal mound' nor beneath the south mound (Wilmott 2009, 112–3);
- Hare Hill (53): 'a thin layer of mixed earth hardly more than 4 feet (1.22m) long', 'a much more uncertain structure' than the north and south mounds (Haverfield 1904, 246);
- Bleatarn (60): there were two marginal mounds; the southern was based on 'a black line resembling an original surface line; the above ridge was made of mixed grey sand and grey clay' and the northern was also based on a black line, 'above was light yellow sand from the subsoil, with a little gravel, flanked with clay' (Haverfield 1895, 463); the 'marginal mounds' were larger than normal, averaging 8.4m wide (Hodgson 1896, 248–9);
- Whitemoss (60): there were two marginal mounds; the southern was composed of 'mixed sand and peat lying on an original surface line, 2 inch (50mm) thick, of black peat, with the original

sand below' (Haverfield 1895, 460); the mounds are unusually large at 5.8m and 8.2m wide (Hodgson 1896, 248–9);

- Brunstock (63): the marginal mound was either 1.22m or 2.44m wide (Haverfield 1895, 457; Hodgson 1896, 248–9);
- Knockupworth (67): a layer of silty clay overlay the remnant buried soil of the Vallum ditch, and in turn was overlain by clay and cobbles and sand deposits, the whole about 350 mm thick, and cut by the recut Vallum ditch to the north, but spreading about 8m to the south (Zant forthcoming).

The marginal mound varied considerably in size, with widths from 1.22m to 7.6m being recorded, though with the width generally less than 6m; only Cawfields and the mounds at Bleatarn and Whitemoss exceeded this, the latter two instances being unusual not only in their size but also because they exceed the scale of the north and south mounds. For this reason, doubt must be cast on the interpretation of the wide, low bank at Knockupworth as the marginal mound.

Haverfield excavated many trenches across the Vallum during his 1894–1903 campaign, mostly in Cumbria, in the process sectioning the marginal mound in a number of places. Mrs Hodgson's conclusion on the contents of the marginal mound was that 'the upcast is much more mixed than in the larger mounds, and which is considered to be the result of later clearings of the ditch' (Hodgson 1920, 283).

The crucial observations arising from the excavations are:

1. The marginal mound was constructed differently from the main north and south mounds, being without revetments, except at MC 23 (Stanley Plantation), where it is revetted with a turf kerb, and MC 42 (Cawfields), where a line of boulders was placed on the edge of the ditch;
2. It was generally formed of looser material and could have been created, at least in part, from debris which had fallen into the open ditch;
3. At MC 42 (Cawfields) the marginal mound sat on a stoney layer which did not extend under the south mound; the grass-covered 'metalled path' at MC 34 (Grindon) may be a similar 'stoney layer';
4. At Black Carts and at Appletree the marginal mound was regarded as being at the same stratigraphical layer as the south mound (Wilmott 2009, 135);
5. At MC 42 (Cawfields) there was a second phase to the marginal mound, which yielded a fragment of samian dated to the late second or early third century.

The north marginal mound

In some locations a north marginal mound has been posited. At Bleatarn and Whitemoss (see above) there was a marginal mound on each lip of the ditch, and at Castlesteads there may have been a northern mound (Haverfield 1902, 388, section). Simpson and Shaw identified a length to the south of Cockmount Hill and they suggested that it was created because of 'the exceptional height of the south side of the Ditch. ... The upcast has been almost equally disposed in each marginal mound' (Simpson and Shaw 1922, 415–6).

Swinbank tentatively suggested the possibility of a low bank on the northern side of the crossing at various locations. At Matfen, the Vallum has been ploughed so that the features recorded by Swinbank are no longer visible, while I was unable to identify the possible banks in the section between T 22b (Stanley) and MC 23 (Stanley Plantation) recorded by Swinbank (1954, 55). Between T 30a (Carrawburgh East) and T 30b (Carrawburgh West), there is certainly a swelling on the north lip of the ditch at two crossings (Swinbank 1954, 73–4). These

features, however, are only identifiable because the north berm is depressed to each side of the 'mounds'. The reason for this is not clear. The Vallum sloped from south to north at these points so the profile at the crossing was what one might expect, but it is possible that it survived in this form because of an action such as the dumping of stone at the north end of the crossings. This, however, is going beyond the evidence. The existence of a northern marginal mound requires further testing on the ground through survey and excavation.

The marginal mound and the crossings

The relationship between the marginal mound and the crossings and gaps is complex. All the following relationships may be observed on the ground, though only the clearer examples are cited:

- no gaps, no crossings, no marginal mound (Planetrees (26): Swinbank 1954, 61);
- gaps in both mounds, no crossings, no marginal mound (Wallend Common (46): Simpson and Shaw 1922, 400-1);
- gaps partially dug or depressions in both mounds, no crossings, no marginal mound (High House (50): Simpson and Shaw 1922, 402, who observed that the occasional crossing is modern; here there are also gaps in the Turf Wall: Simpson and Shaw 1922, 402-3; Coombe Crag Wood (51): Swinbank 1954, 105, not observed by Simpson and Shaw 1922, 398);
- gaps in both mounds, crossings, no marginal mound (38-41; Cockmount Hill (43); Carvoran (45); Davidson's Banks (67): Simpson and Shaw 1922, 409-13);
- gaps in both mounds (except where the Military Way or the modern road lies on the north mound), crossings and a southern marginal mound (Stanley Plantation (22-24); Greenfield Farm (24); Tower Tye - Carrawburgh (29-31), Carraw (32); Knag Burn (34-36): Swinbank 1954, 65-79, 279, 280; Heywood 1965, 92); sometimes the gaps in the south mound have not been completed, as at Cawfields (Swinbank 1954, 90-2), while between Limestone Corner and Carrawburgh farm the marginal mound is not continuous;
- gaps in both mounds, no crossings, and a southern marginal mound (Carrawburgh — Sewingshields (31-33b): Simpson and Shaw 1922, 414),
- gaps in both mounds, no crossings, a marginal mound on both berms (West Cockmount Hill: Simpson and Shaw 1922, 415-6); Haverfield recorded both a north and a south marginal mound at Bleatarn and Whitemoss (Haverfield 1895, 463-4), and a north marginal mound at Castlesteads (Haverfield 1902, 388, section) though his excavations took place before the crossings had been discovered and none were noted in any of these locations);
- gaps in both mounds, crossings, no marginal mound, though with a short bank of earth cutting off access to the southern end of the crossing (East Wallhouses-Matfen Piers (18 & 19): Simpson and Shaw 1922, 413-4; Swinbank 1954, 48-9, but no longer surviving).

Two general points may be noted. First, some evidence for gaps/crossings exists wherever the Vallum is well enough preserved to retain the visible evidence with but one exception, and then Swinbank carefully uses the words 'no apparent gaps or crossings' (Swinbank 1954, 61).

Second, there is no place where there is a gap in the marginal mound opposite the gaps in the north and south mounds and the crossings (in some places where there was no marginal mound there was a short bank of earth cutting off access to the crossing).

Simpson and Shaw (1922, 416) argued that the ditch is broader where there is a marginal mound and therefore the mound resulted from widening the ditch. Swinbank, however, pointed out that the marginal mound is also present where the ditch is narrower and therefore the argument was flawed (Swinbank 1954, 288). Her conclusion was that there were places where the ditch was wider than normal from the beginning, and this was reinforced by her observation that 'huge crossings exist in both the broad and narrow sections alike' (Swinbank 1954, 299-300).



Fig. 1 The south mound of the Vallum, just to the west of Limestone Corner, looking east. The material from the gap cut in the mound has been spread out on the south side.

Swinbank pointed out that the situation on the ground is more complicated than the Simpson-Shaw analysis, noting, for example, that in relation to the south mound 'it seems clear that for the greater part of the well-preserved sectors of the earthwork the gaps were rarely deeper than half the mound' (Swinbank 1954, 296). She also emphasised the point recorded by Simpson and Shaw that there was not always a close relationship between the size of the gaps in the mounds and the amount of material in the crossings, and that where the gaps were shallow more material must have been added to create the crossing (Simpson and Shaw 1922; Swinbank 1954, 295–7). Swinbank also noted that to the west of Limestone Corner the basalt boulders previously lying on both berms were tumbled into the ditch to form the crossings (Swinbank 1954, 297). On Wallend Common (46–47), Simpson and Shaw stated that the material from the gaps was spread outside the Vallum and left lying in small heaps; Swinbank recorded that 'the exact position of this state of affairs could not be discovered' (Simpson and Shaw 1922, 400–1; Swinbank 1954, 99). Swinbank did, however, record that between Limestone Corner and Carrawburgh farm (30–31) the material from a gap was spread over the ground to the south (Swinbank 1954, 71); this is still visible (fig. 1).

To complicate matters further, it must be emphasised that few excavations have taken place and those undertaken to date have revealed features not visible on the surface. At MC 23 (Stanley Plantation) the gap in the north mound was subsequently closed with the material filling the gap revetted with stone kerbs (Heywood 1965, 93; Heywood and Breeze 2008, 97). At MC 50 TW (High House) excavation demonstrated that in its third phase the ditch was emphasised through earthen banks, isolating the secondary causeway over the ditch (Simpson and Richmond 1937, 174–5).

The most recent excavation of the Vallum, at Knockupworth, appears to have located a crossing, as evidenced by the filling which included a substantial chunk of turf, which was subsequently cut through by a secondary ditch on the line of the south lip of the original ditch. This is precisely the sequence which should have been anticipated, with the secondary ditch even beside the normal location for the marginal mound. It was also suggested that the material from a gap in the north mound appears to have been spread outside the gap (Zant forthcoming).

The Military Way

Horsley recorded that the Military Way ran along the top of the north mound in various locations between MC 16 (Harlow Hill) and T 33b (Coesike), though the road moved off the mound at milecastles (Horsley 1732, 141–6; Birley 1961, 113–4). Elsewhere, the road ran along the north berm (Simpson 1913, 389–93; Birley 1961, 113; Zant forthcoming), or between the Vallum and the Wall (Bennett and Turner 1983, 72, who record the road immediately to the north of the north mound at Wallhouses). Excavations to examine the relationship between the Military Way and the Vallum have been few:

- Carrawburgh: excavations in 1921 demonstrated that three gaps in the north mound had been filled in to take the Military Way and the material was the same as that used in the marginal mound (Simpson and Shaw 1922, 417–8);
- Limestone Corner: Brenda Swinbank cut a section across the whole of the Vallum in 1952: 'the surface of the Military Way proved disappointingly poor and was merely a layer of loose gravel and angular stones set immediately above the lighter gravel of the mound. ... a bank of solid dark brown soil was added to the southern limit of the north mound in an attempt at least to support the mound in its new purpose, if not to widen its effective crest. The material is quite unlike the subsoil of mound upcast' (Heywood 2009). Where the Military Way moved off the north mound as it approached MC 30 (Limestone Corner), it was constructed differently, being 'laid upon solid basalt and ... composed of whin cobbles surfaced by baked shale and edged with large whin bounders' (Swinbank 1954, 305);
- Knockupworth (67): metalling on the north berm (see above) may have been the Military Way (Zant forthcoming).

This is little to go on. The Military Way was clearly later than the north mound, but how much later it is not possible to say. As with the marginal mound, there is the question of the source of the material used to create the bank on which sat the metalling of the Military Way.

The relationship between the Vallum, the Wall and the forts

The discovery that the Vallum deviated round MC 50 TW (High House), while some distance to the east the Wall and Vallum were so close together that the north mound of the Vallum was omitted, demonstrated that here the construction of the Vallum is later than that of the Turf Wall (Simpson and Richmond 1936, 158–70). This is the most obvious example of proximity, but there are others discussed by Swinbank who concluded that 'in practically every case the Wall and the Vallum approach each other at the top of a hill, or occasionally at the bottom of a steep slope such as at river crossings. ... the Vallum in such a change of direction bends before the Wall does, suggesting that the Wall was there first rather than vice versa' (Swinbank 1954, 225).

The Vallum also is known to diverge round the south side of Benwell, Rudchester, Halton Chesters, Birdoswald and Castlesteads, and the north side of Carvoran, while at Benwell,

Housesteads, Great Chesters, Birdoswald, and possibly Stanwix, an undug causeway of earth across the Vallum ditch has been located (Breeze 2006, 154–5, 245, 274, 297, 344–50). These causeways, however, sit in isolation from any road system. We can see that later they led south into the extramural settlement, but only the forts at Chesters and Great Chesters can be shown to link to the wider road pattern, in both cases the Stanegate.

On a *priori* grounds, the Vallum ought to be later than the forts as it deviates round them, or at least its construction in their vicinity was later than that of the forts. John Poulter has examined the line of the Vallum and concluded that it was laid out from — or from the vicinity of — certain forts in each direction, Benwell, Rudchester, Halton Chesters, presumably Chesters and Birdoswald (Poulter 2009, 42–4, 46–8, 52–4 and figs 2.5, 2.8, 2.11, 2.17). Further, he has pointed out that the Vallum at Birdoswald appears to have been sighted on, or from, T 49a which implies that the fort was not in existence when the Vallum was surveyed (Poulter 2009, 76).

Welfare has surveyed the area of the camp at Shield-on-the-Wall and concluded that the north rampart of the camp respected the position of the Vallum even though the earthwork had not yet been constructed (Welfare 2013).

Discussion

This review of the evidence emphasises that there is little in the way of uniformity in the various elements of the Vallum. Perhaps, as stated at the beginning of this paper, the main standardised elements were only the width and the general principle that there should be a central ditch with a mound set back on each side. The earth from the ditch could have simply been spread to each side of the ditch or formed into a glacis but a more complicated arrangement was undertaken, the creation of a mound set back on each side with the earth retained by kerbs, be they of turf, clay or stone. There is, however, more to it than that because the existence of the gaps in the north mounds indicates that movement was envisaged along the north berm from the causeways at forts. The existence of large boulders encumbering the north berm at Limestone Corner renders such movement problematical. Perhaps here, as at the adjacent stretch of the Wall ditch, the task of tidying up the Vallum was not completed and a different route was found for access along the Wall. Possibly the tracks were local lines of convenience. A level of support for movement along the north berm is provided by Horsley's observation that the Military Way later ran from milecastle to milecastle (Horsley 1732, 121).

We may also note that much of the evidence is conflicting and it is not possible to determine which aspect is the stronger. There are, however, some apparently non-controversial points. So far as we can determine, the ditch appears to have been left to silt naturally, no evidence having been found to suggest that it was recut. No new evidence has been found to change the conclusion of the botanist Dr Blackburn in 1939 that a gap of between five and 15 years occurred between the excavation of the ditch and the creation of the crossing on Cockmount Hill. The number of differences and problems are considerably greater, and the difficulties in solving them are compounded by the variations in the widths and sizes of all elements of the Vallum; it is difficult to argue that one difference is more significant than another. Perhaps the greatest problems focus on the marginal mounds.

First, there appears to be insufficient material in the gaps in the mounds to create the crossings over the ditch. Where did the additional material come from? Perhaps some

material was scraped up from the berm, though the evidence from Blackcarts and Appletree would suggest not in those locations. How do we determine the answer to the question?

Second, where did the soil come from to create the marginal mound (and, equally, where did the material come from to underpin the Military Way)? Excavators over the last hundred years have stressed how the marginal mound was a 'much more uncertain structure' than the two main mounds. It was mostly clean loose soil, not always the same as the material in the adjacent south mound and sometimes described as silty. There is no evidence for recutting of the ditch, but, as a result of her three sections across the marginal mound, Heywood suggested that its contents could have been taken out of the ditch, which would have accumulated some debris after standing open for perhaps forty years; the evidence from Black Carts and Appletree does not contradict this. But in that case, why were all the crossings not removed in order to help create the marginal mound, as they appear to have been done on the western slope of Cockmount Hill? Perhaps it was easier to obtain soil from elsewhere. While the size of the marginal mound varied considerably, Heywood also emphasised its small nature in most places once the turf cover had been removed indicating that there was relatively little debris in the ditch, assuming that the material came from there.

Third, there is disagreement over the relationship between the marginal mound and its underlying strata. Near Appletree, Haverfield recorded that both north and south mounds and the marginal mound rested on an original surface represented by a broken black line. In later work in the same area Wilmott recorded that the south mound and the marginal mound both sat on a surface from which the turf had been removed. At Black Carts the south mound and the marginal mound both sat on a layer of hard iron panning which overlay ard marks. At Cawfields, however, the marginal mound sat on a stony layer which did not continue under the south mound, though both overlay an old turf line. At MC 34 (Grindon) the marginal mound overlay the grass-covered metalling on the berm.

Wilmott argued that the stratigraphical evidence at Black Carts and Appletree indicated that the south mound and the marginal mound were contemporary, and that this was supported by the clean nature of the marginal mound at Black Carts, Appletree, Limestone Corner and Cawfields which demonstrated an early date for its creation (Wilmott 2009, 135). If the layer south of the ditch at Knockupworth was a remnant of the marginal mound, the fact that it was crossed by the recut ditch, itself undated, would point to an early date, but the width of the layer must lead to doubt being cast on the interpretation.

Wilmott's argument did not take into account the stony layer under the marginal mound at Cawfields, nor the grassed-over 'metalling' below the marginal mound at Mosskennels. Wilmott was reinforced in his argument by the suggestion that the greater width of the south berm towards the eastern end of the Wall was significant. We have, however, discounted this, arguing that there was considerable variation in the widths of berms and mound. Further, Heywood's view, as a result of her own excavations of the Vallum, as we have seen, was that the material in the marginal mound could have been acquired from the ditch.

The difference between the carefully constructed north and south mounds and the marginal mound formed of loose material has been noted by all excavators. This renders it unlikely that the marginal mound and the south mound are of the same date. Wilmott sought to square the circle by suggesting that the marginal mound might be 'near-primary' (Wilmott 2008, 123). Such a solution would, however, cause problems. Logic dictates that the marginal mound is later than the crossings and if the marginal mound is 'near-primary' somehow the construction of the crossings has to be fitted in first. There was some silting in the ditch below

crossings, and in one case the growth of some peat. Of course, such silting and peat growth cannot be dated, though it was argued that a minimum of five years had elapsed before the crossing was created on Cockmount Hill. Nevertheless, it seems unlikely that the original plan for the Vallum should have been so substantially amended within such a short time of its construction by the creation of crossings, which implies abandonment of the purpose of the Vallum, only for it to be quickly reinstated.

A further issue may be flagged: the origin of some of the material in the various elements of the earthwork. We have already noted that there sometimes appear to have been insufficient material removed from the gaps in the mound(s) to create the crossings over the ditch. Swinbank recorded that the material in the crossing at MC 23 (Stanley Plantation) was not the same as in the slighted mound, while at Down Hill the material forming the marginal mound was not the same as that found in the ditch. Where did this earth come from?

DATING EVIDENCE

There is practically no artefactual evidence from the monument itself to date it. The best we can do is to establish a relative chronology. The general belief that the construction of the Vallum was later than the addition of the forts to the Wall because it diverges round them has been supported by Poulter's observation that the Vallum appears to have been laid out from certain forts, or from the vicinity of these forts. One fort is Birdoswald, but Poulter has suggested that the line of the Vallum related to T 49a, a structure which was part of the original plan for the Wall and demolished when the fort decision was implemented. Welfare (2013), on the basis of his observations of the visible features at Shield-on-the-Wall, has postulated that the Vallum was part of the original plan for the Wall, but it is possible to argue that in this sector, where we know that the construction of the Wall was falling behind any initial plan, the marking out of the Vallum may have preceded that of the Wall (Welfare 2013). Unfortunately, no excavations have been undertaken between MC 30 (Limestone Bank) and T 33b (Coesike) and therefore we do not know whether any Broad Foundation existed in the particular stretch that included Shield-on-the-Wall. Whilst Broad Foundation has been found everywhere that excavations have taken place from the River North Tyne at Chesters (T 27a) to T 43a (Cockmount Hill), no Broad Wall has been recorded except at structures, indicating that work was at a very early stage before the decision to narrow the Wall (Hill 2004, 171–3; Swinbank 1954, 231–2 for the excavation to the east of MC 30). It is possible that no Wall foundation had been laid before the surveyors of the Vallum arrived. Whichever interpretation is accepted, it appears that the construction of the Vallum came soon after the decision to construct forts on the Wall line but before the curtain was completed.

It might be thought that the existence of a causeway of undug earth at Great Chesters fort, the erection of which is dated to after 128 by an inscription (*RIB* 1736), would provide a *terminus post quem* for the construction of the Vallum, at least thereabouts. But this does not follow. Great Chesters was clearly one of the main (primary) series of forts (Swinbank and Spaul 1951) and the causeway could have been created (by the digging of the Vallum ditch to each side) well before the actual construction of the fort. It seems possible that an original plan for the fort was changed, so the fort site could have been designated years before construction work was started, or at least completed (Heywood and Breeze 2010).

The terminal date for the construction of the Vallum is provided by the fort at Carrawburgh which overlies the Vallum. A building inscription (*RIB* 1550) is generally dated to the

governorship of Sextus Iulius Severus, governor in the early 130s, but could refer to his nephew, Cnaeus Iulius Verus, governor in the 150s (Birley 2005, 132). The Trajanic-Hadrianic pot found in the backing of the fort's strong-room may be a better indicator of the date of construction of the Vallum to Hadrian's reign (Breeze 1972, 113).

We tend to assume that the Vallum was constructed in one campaign, but Graafstal (2012, 154) suggested that it may have been developed piecemeal, which receives some support from Welfare's observation (pers. comm.) that the differences in the various elements, not least in the size of the ditch, may indicate economy measures through a wish to speed up work, as we can see elsewhere on the frontier in the reduction in the width of the Wall and the lowering of standards of workmanship (Breeze 2006, 103-4).

There may be evidence that the construction of the Vallum took some time. The sequence adduced by Welfare (2013) at Shield-on-the-Wall indicates a period of time between the surveying of the Vallum and its construction and, if he is correct, and if Haverfield was correct in stating that the Vallum stopped 12.2m from the fort wall at Carrawburgh, then here also there is evidence for an extended programme of work. Be that as it may, Graafstal pointed out that the completion of the Vallum is likely to be late in the building programme as it cut off access to the building project from supplies as well as communication from the south (Graafstal 2012, 154).

Excavations have demonstrated that the crossings are a secondary feature. They were created at the same time that the mounds were slighted because the gaps in the mounds are normally at the same position as the crossings; it seems likely that the more substantial causeways at milecastles date to the same time. It would appear that this task was not completed because some gaps were left unfinished while crossings were not always formed in the ditch. There are no gaps in the marginal mound; this has to mean that its construction was later than the creation of the crossings (Heywood 1965, 92). Furthermore, the marginal mound effectively blocked access to the crossings and where there is no marginal mound sometimes a short length of bank, usually on the south berm, but sometimes the north, served the same purpose. In effect, the formation of the marginal mound recreated the original purpose of the Vallum by seeking to prevent movement across the ditch.

It is likely that the infilling of the gap in the north mound at MC 23 (Stanley Plantation) dates to this time (Heywood and Breeze 2008, 106). The action hints at a different use for this element of the Vallum, that is that the north berm was not required for movement. The blocking, however, could be later and perhaps indicates abandonment of the milecastle.

Absolute dating of any aspect of the subsequent history of the Vallum is impossible on present evidence. Analysis of the crossing on Cockmount Hill led to the suggestion that it was created between five and 15 years after the cutting of the ditch. The date depends upon the date of the creation of the Vallum, and a year or two to either side of 125 may be acceptable for this. The deposition of a chunk of turf measuring about 2m by 1m in the ditch at Knockupworth, above the primary silt, suggests that this formed part of a crossing and that the crossing related to a slighting of the Turf Wall, generally agreed to be in about 142 (see below).

There is a second phase to the marginal mound at Cawfields in which was found a sherd of samian dating to the late second or early third century, indicating that, in the later years of the second century at least, the Vallum was still regarded as important. Evidence at Benwell indicates that the Vallum there was infilled towards the end of the second century (Swinbank 1955); it was even earlier at Birdoswald (Swinbank and Gillam 1950). Such actions may relate

only to the forts where civilian settlements were allowed to spread across the Vallum, and at Birdoswald by the restricted position of the fort on the plateau above the Irthing Gorge. All this suggests that after its original construction we should be wary of assuming that the recorded actions on the Vallum took place at the same time.

The two main actions — the creation of the gaps and crossings — and their part obliteration and the creation of the marginal mound — have long been associated (albeit without unequivocal evidence) with known events on the northern frontier. The first action would most logically date to the time that the milecastle gates were removed — demonstrating that Hadrian's Wall was thrown open to through traffic — which we presume related to the decision to abandon Hadrian's Wall and build a successor further north in the early 140s. The creation of larger causeways at milecastles could be seen as part of the same pattern, access being provided at these points through the Wall. The abandoned Turf Wall section between Birdoswald and MC 51 (Wall Bowers) was slighted in a similar way to the Vallum and therefore presumably at the same time. The evidence from the recent excavation at Knockupworth has been taken to suggest that the Turf Wall was slighted elsewhere along its line. The second action, the creation of the marginal mound and the short banks, would therefore date to when the army returned to Hadrian's Wall in the years following 158 and reversed the slighting of the Vallum. This is, of course, the common form of arguing, namely linking archaeological events to recorded historical actions. The known evidence does not preclude a different interpretation, which is that even while the frontier was being built it was decided that the Vallum was defunct; the timescale for the filling of the ditch at Cockmount Wood could fit that timetable, as would Wilmott's interpretation of the stratigraphy at Appletree and Black Carts. But why would the Vallum be later brought back into use, perhaps even during the reign of Hadrian? Could the possibility of warfare on the northern frontier be advanced as an argument (Breeze 2003)? On balance the traditional thesis seems to apply best to the evidence. We can surely agree that the very regularity of the action of slighting the Vallum points to the hand of the army.

Can we explain the present state of the Vallum in relation to such a scenario? The evidence still visible on Wallend Common, for example, where there are unfinished gaps in the south mound, demonstrates that the intention to slight the whole earthwork was not completed, and the lack of crossings may be taken to support this, though it could be argued that they had been later removed. The formation of the marginal mound and the small banks which cut off access to the crossings are best explained as a reinstatement of the Vallum. This seems to have been accompanied by the removal of some crossings. There are many places though where the crossings and gaps remain and therefore it would appear that the general task of recreating the Vallum was not completed. Finally, it must be acknowledged that the filling of the gap in the north mound at MC 23 (Stanley Plantation) demonstrates that actions could be undertaken and not be visible today, and that caution must be exercised in all interpretations.

One speculation may be permitted: can we determine whether the slighting of the Vallum was done before the army moved north or after it had completed the building of the Antonine Wall? In part the answer depends on the questioner's view of the Roman army. I believe that the defence of the province lay not in the maintenance of a wall, but in the hands of the army. Accordingly, with the army in the field, as it was when it moved north from Hadrian's Wall, there was no reason why it had to leave behind a fully functioning barrier. Since we can only presume that the decision had already been taken to build a new wall, it seems possible that the army slighted Hadrian's Wall before taking to the field to march through territory which

had once been Roman and had been under Roman surveillance for the previous 50 years, and the conquest of which 60 years before had given the army no trouble (Tacitus, *Agricola* 22). We may add to this that it seems unlikely that soldiers were left to man the milecastles and turrets of Hadrian's Wall while the army marched north; they would have no purpose there but would have a purpose in the invading army. Perhaps the incomplete nature of the slightings also argues for an early date for these actions in that it is easier to see the task being abandoned unfinished in the face of the necessity to set the army on its main task: the conquest of new territory and the acclamation of Antoninus Pius as *Imperator*.

THE PURPOSE OF THE VALLUM

How did the Vallum work?

The design of the primary phase of the Vallum seems to be reasonably clear: a central ditch with a mound set back to the south and a similar mound to the north, but with evidence from some places for gaps opposite milecastles but no causeways over the ditch. The Vallum could only be crossed at forts where gates were opened from the north, that is, the fort side of the earthwork. Some evidence for metalling on the north berm has been found, and some claimed for the south berm though the evidence is less satisfactory.

How was this arrangement intended to work? Metalling on the south berm would be puzzling. A walk along this berm would only lead to the next fort, but in any case would be difficult as there could be obstacles such as large stones along the way.

Metalling on the north berm has been recorded in four modern excavations. At two other sites, both the subject of modern excavations, tracks have been located between the Wall and the Vallum. Perhaps the situation was more fluid than usually supposed and the east-west line of communication could be either along the north berm of the Vallum or between the Vallum and the Wall. Movement along the north berm would be more sensible than along the south berm. A traveller would pass over the causeway at the fort and proceed in either direction. The only known gaps in the north mound were at milecastles and only five are known. But metalling has not been found on the north berm everywhere it has been sought and, again, there would be obstacles to movement in the way of travellers. Perhaps, as noted above, some tracks are later and are local lines of communication.

What was the purpose of the Vallum?

The discussion has emphasised both the significance of the Vallum and at the same time the almost cavalier way in which it was treated by the army. Yet, neither aspect aids understanding of its purpose. Various reasons for its construction have been offered which may be briefly summarised (cf. Woolliscroft 1999 for the most recent detailed discussion):

1. The Vallum was a secondary line of defence (cf. Horsley 1732, 125; Woolliscroft 1999 argued that it helped to control raiding from the north);
2. It was a temporary measure to protect the soldiers quarrying for stone to build the Wall (Nielson 1891, 38–9);
3. It may have been a substitute for the Wall if there was a phase when it was not intended to complete the curtain (Bennett 2002, 828–9), or 'was created as a temporary measure because some delay occurred whilst building Hadrian's Wall' (Poulter 2010, 129–31);

4. It protected the rear of the Wall zone (Horsley 1732, 125; Hodgson 1840, 310; Ferguson 1880, 86–7; Richmond 1950, 52; Morris 1950, 51–2), providing protection for the soldiers moving along the Wall (Shotter 1996, 66); or served as a boundary marker to the rear of the military zone (Dobson 1986, 18), thereby creating a sort of elongated annexe along the length of the Wall, hence negating the necessity for annexes beside individual forts (Salway 1965, 68);
5. It prevented the locally-levied soldiers manning the Wall from drifting home (Stevens 1955, 390, 396);
6. It was the legal boundary of the province (Mommsen 1894; Haverfield 1894);
7. The act of construction was to keep soldiers fit (Forster 1915, 188).

Practically every one of these proposals is open to challenge.

A second line of defence

The very nature of the Vallum, with a mound on each side of the ditch, indicates that its purpose was not military defence providing protection against attack from either the north or the south (Horsley 1732, 125–6; Woolliscroft 1999, 53–6). Nor, as observers have stated for decades, is it in a good defensive position; Simpson and Shaw (1922, 361) said firmly that the 'defects in the course of the Vallum prove that the governing consideration in the minds of the surveyors was not a military one'. Perhaps we should not place too much emphasis on the statement that in places a group of schoolboys could have driven off the world's pre-eminent fighting force; the only point is that the Vallum was in places overlooked, but so were many Roman forts (Breeze 2002). Its interpretation as a back-stop to the Wall is rather redolent of trench warfare, but more importantly it flies in the face of Collingwood's view of the army as being a mobile fighting force which would prefer to fight in the open and was not well equipped with defensive weapons (Collingwood 1921). Would such an army, used to relatively lightly defended forts (Tacitus, *Histories* 4, 23), feel the need to protect its bases, its grazing grounds and its equipment from pilferers to the south, or to create a second line of defence when it would not normally be defending the first but rather fighting to its north in the open?

If the Vallum was a back-stop, why was it not built a regular distance behind the Wall, and why was it so close to the Wall in many places? It might be thought that a back-stop would be a broadly standard distance behind the Wall, and not too close. Humphrey Welfare has offered an answer, that the Vallum only moved away from the line of the Wall where the natural topography provided enough strength. Against this, it might be argued that the Vallum lay south of the crags to take advantage of the easier ground to excavate, while in some areas it cut across a loop of the Wall thereby reducing the workload.

A second point relates to which way the Vallum faced. Welfare has pointed out that at some Roman temporary camps no rear entrance was provided, presumably because the camp faced in the other direction. North Yardhope and Swine Hill on Dere Street both faced the road, while Watchcross, between the Wall and the Stanegate, faced north (Welfare and Swan 1995, 119–20, 130, 51; Richmond and Hodgson 1936). On that basis, it could be argued that the Vallum faced north. But did it face the enemy or a zone of frontier control? Does the location of the marginal mound on the southern lip of the ditch emphasise the northern outlook?

We ought also to consider the Vallum in relation to the rest of the Wall. The Vallum is an enormous earthwork, with more attention to detail than was strictly necessary; the mounds were set far back from the ditch edges and were carefully revetted. But Hadrian's Wall itself

is far larger than might be thought would be required. Its very size was a puzzle to Mommsen 150 years ago. He explained it by suggesting that the enemy in Britain was stronger than that in Germany (Mommsen 1968, 163, 195–7)

A temporary measure

The view of Collingwood — and Tacitus — is equally relevant here. Why would an army which did not create stronger defences because it did not believe its forts would be attacked (Tacitus, *Histories* 4, 23) feel the need to create a temporary defence? The best temporary defence was not a line, which could not be defended both as a result of its form of construction and through the lack of men to string along it, but the army in the field. Horsley, by implication, did not see the need for a temporary measure when he stated that the work of building the Wall would not have been 'carried on in the face of the enemy' because the Romans controlled the land to the north (Horsley 1732, 123–4). Further, if the Vallum was created to deal with a short-term situation, why was it built where the Wall had already been erected, or at least partly built, on both the Stone Wall and the Turf Wall sectors, and why was it re-commissioned and retained in use well into the second century? Poulter has offered one solution: it was built as a temporary measure but then retained in use with a different purpose (Poulter, pers. comm.; cf. Woolliscroft 1999, 64, who argued that the Vallum may have served more than one purpose; and Graafstal 2012, 154 who rejected the temporary argument).

One of the difficulties in a discussion of the Vallum as temporary measure is that we do not know how long Hadrian's Wall took to build and therefore how long the Vallum might have served in a temporary capacity. I have listed the evidence which suggests that progress on building the Wall, perhaps only after the first year or two, was slow, and argued that it is possible that it was not completed by the death of Hadrian (Breeze 2012, 75). If correct, this could be support for the temporary solution.

An annexe

The line of the Vallum has to be seen in its entirety: for almost half its length it strayed some distance from the position of the Wall; so, maintaining a tight relationship with the Wall, as it did for about half its length, was not necessarily a primary concern. If the purpose of the Vallum was to create the equivalent of an annexe along the Wall, it might be expected that additional space would have been provided at forts, but that was not the case, quite the reverse for the Vallum hugs the forts closely. A simplistic view of the line of the Vallum might lead to the conclusion that it would have been easier to place the whole earthwork a little further south so as to avoid the trouble of creating a diversion. John Poulter has suggested to me that the reason why this did not happen was because 'the Romans wished to maintain a fairly tight clearance around the perimeter of forts' (pers. comm.). But why? Here was a strong force of men capable of defending themselves and their dependents; any raider would be unwise to try to cross the frontier at this point.

Further, if the intention was to maintain a tight clearance at forts, why was the Vallum not pulled closer to Housesteads and Great Chesters? The answer probably lies in the nature of the underlying rock. The Romans would have wished to avoid cutting through basalt and therefore run the Vallum through the softer rocks further south. Yet, the basic point remains, that at these two locations the Vallum was some distance from the fort. Indeed, it might be

expected that the army would welcome more space between the Wall and the Vallum to undertake para-military activities, store materials, graze their horses (and cattle?), and so on, assuming that this was the purpose of the Vallum, though, as Woolliscroft pointed out, a fence would have sufficed for this role (Woolliscroft 1999, 59). In passing we may note that the corralling of animals does not appear to have been the usual purpose of an annexe, which normally contained buildings such as a bath-house, or those connected with industrial activities, and insufficient space to graze horses or cattle.

The construction of the Vallum certainly had the result in creating a type of annexe, and therefore negating the necessity for annexes at forts, but this is likely to have been a secondary or even unintended consequence of its construction.

To prevent local militia deserting

Stevens' offering (1955, 390, 396) that the purpose of the Vallum was to prevent locally recruited militia deserting flounders in the face of the lack of evidence that the Wall was manned by such a force.

The legal boundary

Morris pointed out that the Vallum fell out of use in the later second century which would not be expected if it was a legal frontier or a customs barrier (Morris 1950, 52).

Discussion

If we reject each of these offerings, can we determine the true purpose of the Vallum? Perhaps we should start with its effect. This was to restrict movement in the landscape, reducing crossing points from an original 80 or so to about 14, with these fewer gates much more closely guarded than their milecastle predecessors. The increased control of movement across the frontier has to be significant. The effect of the change was to move the control of movement (by soldiers well below the rank of centurion at milecastles) to men under the immediate eye of a regimental commander at forts (Dobson 1986, 18–24; Woolliscroft 1999, 62–3). It was at each fort that access to the military zone was controlled and although we have not found sufficient evidence to argue for there being a track along the whole length of the north berm, the existence of gaps in the north mound opposite some milecastles hints at how the arrangements would have worked. Traffic is likely to have moved along the north berm from a fort to a milecastle, though this would have been less practical in those sections where the Vallum moved away from the Wall.

Could this be the purpose of the Vallum? It was created because it was simply the most effective way of improving the control of movement across the frontier. At the time of its construction, the army was in the process of moving army units onto the Wall line, but it was maintaining the milecastles (and turrets); it had not yet realised that once forts were placed on the Wall the specific function of milecastles and turrets would change. The existence of the gaps in the north mound of the Vallum at milecastles demonstrates that the intention was that they would continue in use. An alternative might have been to block up the milecastle gateways or remove the causeways over the Wall ditch at milecastles, but that would appear to have been rejected presumably because the milecastles were considered to have a purpose still.

The construction of such a major earthwork might seem to be wholly disproportionate to the problem, but there is something of a similarity here with certain other elements of the frontier: the overprovision of gates in the original plan; their regularity; and the regularity in the spacing of the forts and the rather rare use of complete units to man them. These have been ascribed to the hand of Hadrian (Stevens 1955; Breeze 2009). Perhaps the decision to create the Vallum reflected local opposition to the construction of the Wall; perhaps there was warfare during the construction of the Wall (Breeze 2003). This is as maybe, but the purpose of the Vallum may simply have been in order to improve the army's control of the movement of people in the frontier area. Brian Dobson almost said this; I have merely strengthened the inference.

Why was the Vallum re-created on the return from the Antonine Wall, assuming that was the date of the reversal of its slighting? Here again we can look for an explanation in the general nature of the re-commissioning of the Wall. In spite of the fact that the addition of forts to the original plan should have resulted in far-reaching changes at that stage, it did not. Thirty or forty years later, it would appear that when the Wall was reoccupied it was restored to its original plan. It was only later in the second century that changes may be observed: turrets were abandoned, mainly in the central sector, as unnecessary, and many milecastle gates narrowed or blocked altogether. Perhaps the Vallum was re-commissioned on the return from the Antonine Wall because that is what was ordered generally for the whole Wall. Later in the second century when a more realistic approach was taken to the existence of turrets and milecastle gates, the same attitude may have been extended to the Vallum.

FINAL COMMENTS

It is dispiriting to visit stretches of the Wall described by Simpson and Shaw and by Swinbank. Thirty years after Simpson and Shaw's observations, Swinbank was unable to rediscover some of the more delicate features they recorded. Today, 60 years on, several sections have been so severely ploughed that only the ditch is visible and then only faintly. One such section is that in Wall mile 18 where our predecessors were able to offer detailed descriptions of now vanished elements of this great earthwork. A new survey is required to record the Vallum before other elements disappear.

On the other hand, the Vallum is now subjected to modern examination in a greater number of places. At Millbeck Farm, for example, pits were recorded beneath the relict turf layers of the south mound, and wood from the turf layers has been radiocarbon dated, albeit to the Bronze Age (White *et al.* 2013, 243). Such discoveries offer the hope that future investigations will reveal more significant remains.

The discussion above has emphasised the conflicting conclusions which can be drawn from examination of the Vallum and from the excavations across it. The only way that the conflicting evidence might be reconciled is through further excavation, preceded by a detailed survey not just to record the monument but to aid consideration of where excavations should take place. In particular, analysis of LiDAR survey of the Vallum should be helpful in teasing out the small topographical changes in the ground surface around, for example, gaps that might help determine where the earth went from the gaps and where the earth came to create the crossings and perhaps even the marginal mounds. Vestigial traces of the marginal mounds might also be revealed through LiDAR. Modern scientific techniques may be able to confirm (or amend) the proposed time lapse between the excavation of the ditch and the creation of

the crossings, and certainly all excavations need to be accompanied by soil analysis. Such work will not only aid understanding of the Vallum but also the history of the Wall itself.

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36 Granby Road, Edinburgh EH16 5NL

davidbreeze@hotmail.co.uk

